Management of Achalasia

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Case Presentation

• 61 y.o. man with history of slowly progressive dysphagia to both solid and liquid food

• PMHX – EGD with dilation in 2007 in St. Martin

• PSHX – none

• FAM / SOC HX – non-contributory
Case Presentation

- EGD by GI service at KCHC
  - Entire esophagus was significantly dilated
  - Absence of peristalsis
  - Narrowing at GE junction
  - No masses or stricture
  - Dilation with good effect

- Referred for surgical evaluation after recurrent symptoms.
Case Presentation

• Physical exam
  – A febrile
  – Vital signs are within normal limits
  – Abd: soft, non tender, nondistended

• Laboratory Data
  – WBC – 4.9, H/H -13.5/43.2, Plt- 237
  – Chemistry and LFTs are within normal limits
Esophagram
Case Presentation

• **Esophageal Manometry**
  - Nonrelaxing LES
  - Aperistaltic esophagus

• **Consented for Laparoscopic Esophageal Myotomy**
  - Dor Fundoplication
  - Intraoperative endoscopy by GI service
Intraoperative Details

- Assisting Port
- Dissecting Port
- Babcock Clamp
- Liver Retractor
- 30° Scope
Intraoperative Details
Intraoperative Details
Intraoperative Details
Intraoperative Details

• Dor Fundoplication
Intraoperative Details

• Dor Fundoplication
Case Presentation

• POD #1 –
  – Esophagram obtained
  – Clear liquid diet started

• POD #2 –
  – Discharged home
Post-op Esophagram

Image manually calibrated.
Case Presentation

- POD #12-
  - Tolerating soft regular diet
Discussion

• Epidemiology

• Clinical presentation and Diagnosis

• Treatment
  – Nonsurgical
  – Surgical
    • Laparoscopic esophageal myotomy
    • Thorascopic esophageal myotomy
    • Laparoscopic vs. Thorascopic
    • Need for fundoplication?

• Outcomes

• Conclusion
Definition and Classification

• **Primary achalasia**
  – Unknown etiology
  – Pathology: Degeneration of myenteric plexus leading to lack of inhibitory neurons that control relaxation of lower esophageal sphincter

• **Secondary achalasia**
  – Chaga’s disease (Trypanosoma cruzi)
  – Malignancy
    • Pseudoachalasia – LES obstructed
  – Infiltrating disorders e.g. scleroderma, amyloidosis
Epidemiology

• 1st described by Sir Thomas Williams in 1674

• Incidence around 1/100,000 per year

• Equally affects men and women

• Most common between ages 20 and 50
Clinical Presentation

- Progressive dysphagia to liquids then solids
- Regurgitation of food
- Chest pain
- Weight loss
- Aspiration
Diagnostic Evaluation

• **Barium swallow**
  – “Bird’s beak”
  – Esophageal dilatation

• **Esophageal manometry**
  – Resting pressure of the LES is commonly above 35 mmHg
  – Failure of LES relaxation with swallowing
  – Absence of peristalsis

• **Endoscopy**
  – Rule out secondary achalasia
Nonsurgical Treatment

- Calcium channel blockers, nitrates, beta-agonists, anticholinergic agents

- Pneumatic Dilatation
  - Balloon is inflated across the GE junction under fluoroscopic guidance
  - Good to excellent results noted in 70% of patients
  - Many patients require repeat procedures

- Botulinum toxin injection
  - Lasts approximately 6 – 12 months
Randomized controlled trial of botulinum toxin versus laparoscopic Heller myotomy for esophageal achalasia.

Zaninotto G, Annese V, Costantini M


• Randomized control trial
  – 40 patients undergoing BoTx injections
  – 40 patients undergoing myotomy with Dor fundoplication

• Results
  – Compared symptom recurrence
Randomized controlled trial of botulinum toxin versus laparoscopic Heller myotomy for esophageal achalasia.

Zaninotto G, Annese V, Costantini M


- **Two year follow-up**
  - 87.5% of myotomy patients reported being symptom free
  - 34% of BoTX treated patients

- **Authors suggested limiting BoTX treatments to those pts that were unfit for surgery**
A prospective randomized study comparing forceful dilatation and esophagomyotomy in patients with achalasia of the esophagus

Csendes A, Velasco N, Graghetto I, Henriquez A


- **Prospective randomized trial**
  - Pneumatic dilation (n=18)
  - Myotomy (n=20)

- **Results after 3.5 year follow-up**
  - 100% of patients after myotomy reported improved dysphagia
  - 61% in dilation group
Current Surgical Indications

• Recurrent dysphagia after botulinum toxin injection or pneumatic dilatation

• Ineligible for endoscopic therapy due to previous history of gastroesophageal surgery

• Those who desire surgical therapy as their initial treatment
Surgical Options

• **Open Heller myotomy**
  – Transthoracic
  – Transabdominal

• **Minimally Invasive myotomy**
  – Laparscopic
  – Thoracosscopic
Thoracoscopic Heller Myotomy

- **A**: Camera port. 6th intercostal space behind posterior axillary line
- **B**: 3rd intercostal space. Lung retractor
- **C**: 6th intercostal space, anterior axillary line. Grasper.
- **D**: 7th intercostal space, midaxillary line. Working port
- **E**: Optional
Thoracoscopic Heller Myotomy

- Divide inferior pulmonary ligament
- Retract left lung with lung retractor
- Myotomy is started ½ distance between diaphragm and inferior pulmonary vein
Thoracoscopic Heller Myotomy

- Myotomy is not extended until the mucosa is exposed.
- Distal margin is 5 mm onto gastric cardia.
- Endoscope can illuminate the GE junction by identifying the Z line.
Thoracoscopic Heller Myotomy
Minimally Invasive Surgery for Achalasia: An 8 year Experience with 168 Patients

- Retrospective study of 168 patients at 2 centers between 1991 and 1998 in California
- 35 patients underwent thoracoscopic myotomy
- 133 patients underwent laparoscopic myotomy
- Each patient was followed for up to 6 months
Persistent dysphagia
- 27% in thoracoscopic group
- 10% in the laparoscopic group

In the thoracoscopic group
- 6/10 patients had reflux on esophageal pH monitoring

In the laparoscopic group
- 6/35 had reflux on esophageal pH monitoring
Minimally Invasive Surgery for Achalasia: An 8 year Experience with 168 Patients

- Authors preferred laparoscopic approach, but admit no statistical difference.
Heller Myotomy vs Heller Myotomy With Dor Fundoplication for
Achalasia: A Prospective Randomized Double blind clinic trial
Richards WO, Torquati A, Holzman MD

• Randomized double blind clinical trial comparing
  Heller myotomy versus Heller myotomy with Dor
  fundoplication

• 43 patients enrolled: 21 Heller myotomy alone, 22
  Heller myotomy + Dor fundoplication

• Gastroesophageal reflux was defined by 24-hour
  pH probe.
Heller Myotomy vs Heller Myotomy With Dor Fundoplication for Achalasia: A Prospective Randomized Double blind clinic trial

Richards WO, Torquati A, Holzman MD

- 47.5% | 9.1%

Pathologic GER | Normal pH study
Heller myotomy plus Dor fundoplication was superior to Heller myotomy alone in regard to the incidence of post-operative GER.
### Outcomes Following Laparoscopic Heller Myotomy

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Patients Follow-up (median months/ranges)</th>
<th>Relief of Dysphagia (%)</th>
<th>Length of Stay (median days/ranges)</th>
<th>Perforations (%)</th>
<th>Reflux (%)</th>
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<tbody>
<tr>
<td>Portale</td>
<td>2005</td>
<td>248 43 (1-131)</td>
<td>88</td>
<td>5 (3-11)</td>
<td>4.0</td>
<td>7*</td>
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<tr>
<td>Bonatti</td>
<td>2005</td>
<td>75 64 (10-131)</td>
<td>84</td>
<td>2 (1-6)</td>
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<td>Khajanchee</td>
<td>2005</td>
<td>121 9 (6-48)</td>
<td>91</td>
<td>1.7 (na)</td>
<td>6.6</td>
<td>13*</td>
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<tr>
<td>Arain</td>
<td>2004</td>
<td>78 24 (6-100)</td>
<td>77</td>
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</tr>
<tr>
<td>Perrone</td>
<td>2004</td>
<td>100 26 (6-72)</td>
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<td>Oelschlagar</td>
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<td>90</td>
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<td>Donahue</td>
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<tr>
<td>Sharp</td>
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<tr>
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<td>102 25 (na)</td>
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<td>1.5 (na)</td>
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<tr>
<td>Zaninotto</td>
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<td>91</td>
<td>na</td>
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<td>6</td>
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<tr>
<td>Patti</td>
<td>1999</td>
<td>133 23 (na)</td>
<td>89</td>
<td>2</td>
<td>5.0%</td>
<td>17</td>
</tr>
</tbody>
</table>

* Based on postoperative 24-hour pH monitoring. na, Not applicable.
Conclusion

- Surgical myotomy for achalasia should be considered first line therapy
  - Better long term results when compared to medical management
  - Relatively safe and effective operation
  - Controversy remains over performing the procedure via the laparoscopic or thoracoscopic approach.


References

• Rice TW, McKelvey AA, Richter JE: A physiologic clinical study of achalasia: Should Dor fundoplication be added to Heller myotomy?. *J Thorac Cardiovasc Surg* 2005; 130(6):1593-1600. and others


• West RL, Hirsch DP, Bartelsman WM: Long term results of pneumatic dilatation in achalasia followed for more than 5 years. *Am J Gast* 2002; 97:1326-1351. and others